

REMARKS

Claims 1-10 are pending in this application and stand rejected. Amendments to claims 1-10 are presented above. Claims 11 and 12 are newly added in this response. Applicants have also replaced the original specification with a substitute specification to correct various minor errors in the specification.

The Objection to the Title

The Examiner requires a new title that is more indicative of the invention. Please change the title to the following: "PRINTING METHOD AND APPARATUS FOR SEPARATELY PROCESSING A PLURALITY OF PRINT DATA".

The Objection to the Specification

The Examiner requires the specification be revised to comply with 35 U.S.C. §112, first paragraph. Please replace the original specification with the enclosed substitute specification, which places the specification in the correct format. The substitute specification contains no new matter.

The Objection to the Abstract

The Examiner objects to the abstract for containing objectionable language and various informalities. Applicants submit that the amendments to the abstract in the enclosed substitute specification place the abstract in the correct format. Accordingly, Applicants respectfully request withdrawal of the objection to the abstract.

Objections to the Claims

The Examiner objects to claims 1-5, 8, and 9 because of various informalities. Applicants submit that amendments to the claims presented above correct the informalities. Accordingly, Applicants respectfully request withdrawal of the objections to the claims.

Rejections to the Claims: 35 U.S.C. §102(e)

The Examiner rejects claims 1-10 under 35 U.S.C. §102(e) as being anticipated by Kageyama et al. (U.S. Patent No. 5,774,638). Applicants respectfully traverse this rejection for the reasons presented below.

The Invention

The present invention relates to a printing apparatus and method capable of individually processing a plurality of data (i.e., "print data") to be printed on one page. The print data contains various types of data, each having an attribute, such as text data or form data. The print data are stored in an image buffer according to the attributes and independently read by a plurality of video interfaces (VIFs). Each one of multiple image processing circuits applies various image processes to the data output from one of the VIFs, so more than one kind of image processing may be performed for one page. For example, a smoothing process may be applied to text data while an intermediate tone process may be applied to image data. A print data integration circuit integrates the print data read by the VIFs into one unit of print data for printing on one page.

Thus, the present invention provides multiple video interfaces and image processing circuits that allow more than one type of data to be printed on a single page. Accordingly, it is possible to apply a particular kind of image process to each type of print data read by each VIF, and then print the independently-processed data on one page.

The Reference

Kageyama relates to a print controlling apparatus and method for consecutively printing a plurality of pages constituting a document. In Kageyama, drawing processes and print processes for respective pages are performed by a plurality of processors using print commands that range over a plurality of pages. The drawing processes for different pages are assigned to different processors. Imaginary drawing operations for setting drawing attribute parameters of respective pages are executed without executing real (actual) drawing operations. The real drawing operations are executed for pages having completed the imaginary drawing operations. See Kageyama, abstract; col. 2, lines 15-20; col. 2, lines 27-33; col. 2, lines 53-54; col. 12, lines 37-38.

The Present Claimed Invention Distinguishes Over the Prior Art

Claim 1 of the present invention, as amended, recites a printer outputting “a plurality of types of print data corresponding to one or more images to be printed on one page, ...; an image buffer ... storing each type of print data ... in a different one of the storage locations” and “a plurality of video interfaces, each of said video interfaces independently reading one of the types of print data stored in a corresponding storage location of said image buffer ...”

In one embodiment of the present invention, the print data received by a printer may be divided into a plurality of parts according to the type of data or the kind of image to be printed, and a separate image process may be independently executed for each divided part. Then, the print data are integrated into an image signal for one page and printed on one page of paper.

The Examiner asserts on page 4 of the Office Action that the image buffer of the present invention reads on the shared memory 141 of Kageyama. In Kageyama, a page buffer 34 is allocated in the shared memory 141 (Kageyama at col. 12, line 37). Kageyama describes the page buffer 34 as being “of plural-page construction” (Kageyama at col. 11, line 40), and that each page buffer area comprises a space of one page (Kageyama at col. 12, lines 2-4).

Therefore, the shared memory 141 appears to correspond to a plurality of pages.

In contrast, in the present invention, each of a plurality of storage areas of the image buffer stores one portion of print data according to its attribute or type. This feature enables each type of print data to be independently processed, integrated together, and printed on one page. Therefore, it is submitted that claim 1 patentably distinguishes over the prior art.

Similarly, independent claim 6 recites “a plurality of video interfaces, each of said video interfaces independently reading one of the types of print data stored in a corresponding one of a plurality of storage locations of an image buffer according to the attribute of each type of print data.” Therefore, for the reasons presented above with respect to claim 1, it is submitted that claim 6 patentably distinguishes over the prior art.

As for the dependent claims, the dependent claims depend from the above-discussed independent claims and are patentable over the prior art for the reasons discussed above. The dependent claims also recite additional features not taught or suggested by the prior art. For example, claim 4 recites “a plurality of image processing circuits, each of said image processing circuits applying an image process to the type of print data read by a corresponding one of said video interfaces.” Therefore, for at least this reason and the reasons set forth above with respect to claims 1 and 6, it is submitted that the dependent claims patentably distinguish over the prior art.

Therefore, Applicants submit that claims 1-10 patentably distinguish over the prior art. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under §102.

New Claims

Claims 11 and 12 are newly added with this response to alternatively define the present invention. Claim 11 specifies storing each type of print data, which are to be printed on one

page, in corresponding storage locations of an image buffer, a plurality of video interfaces independently reading the print data from corresponding storage locations of the image buffer, and a plurality of image processing circuits applying image processes to the print data read by the video interfaces. Similarly, claim 12 specifies storing each type of print data in a different storage location, reading each one of the types of stored print data, applying a different image process to each one of the types of stored print data read from one of the storage locations, and outputting the processed print data on one page. These features are not taught or suggested by the cited references. Thus, for at least the reasons presented above, Applicants submit claims 11 and 12 patentably distinguish over the prior art. Accordingly, Applicants respectfully request allowance of the new claims.

CONCLUSION

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding rejections, the application is submitted to be in condition for allowance, which action is earnestly solicited.

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

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If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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